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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/725,384 | 11/29/2000 | James M. Ziobro | D/A0125Q XER 2 0404 | 6573 |

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| EXAMINER | |
|---|---|
| GOOD JOHNSON, MOTILEWA | |
| ART UNIT | PAPER NUMBER |
| 2675 | |

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/725,384 | ZIOBRO, JAMES M. | |
| | Examiner | Art Unit | |
| | Motilewa A. Good-Johnson | 2675 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *25 October 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *4-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/25/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

1. This office action is responsive to the following communications: IDS, paper #4, filed 11/29/2000; Amendment A, filed 03/17/2003; Amendment B, filed 08/25/2003, IDS, paper #9, filed 10/23/2003; Amendment C, filed 02/18/2004; IDS, paper #14, filed 03/23/2004; Request for reconsideration, filed 10/25/2004.

**This action is made final.**

2. Claims 4-23 are pending in this application. Claims 4, 10 and 21 are independent claims. Claims 4-12, 14-18 and 21-23 have been amended.

3. The present title of this application is "Intelligent Color to Texture Converter" (as originally filed).

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomizawa, U.S. Patent Number 6,088,137, "Specified Image-Area Extracting Method and Device", in view of Qian, U.S. Patent Number 6,516,100, "Method for Image Characterization using Color and Texture Statistics with Embedded Spatial Information".

Regarding claim 4, Tomizawa discloses a method for rendering an image described in a multi-color color space, (col. 7, lines 23-31) in a single-colorant color

space (col. 6, lines 1-5, thick or thin group, black or white, col. 5, lines 31-47), the method comprising: collecting histogram information from the multi-color color space image (col. 7, lines 27-31) wherein bins within the histogram classify image pixels based on luminance information and hue information (col. 5, lines 7-35); classifying peaks within the histogram that have similar luminance as conflicting colors (col. 7, lines 32-35);

However, it is noted that Tomizawa fails to disclose applying at least one distinct spatial modulation to, and only to, at least one representative single colorant version of at least one of the conflicting colors, thereby ensuring that all single colorant versions of colors in the image are visually distinguishable from one another while minimizing distortions in a remainder of the single colorant version of the image.

Qian discloses applying at least one distinct spatial modulation (col. 3, lines 10-15) to, and only to, at least one representative single colorant version of at least one of the conflicting colors (col. 3, lines 40-45), thereby ensuring that all single colorant versions of colors in the image are visually distinguishable from one another while minimizing distortions in a remainder of the single colorant version of the image. (col. 6, lines 15-29)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include applying a spatial modulation to one representative color of the conflicting color, as Qian teaches, in the system of Tomizawa, to avoid a color blob and to allow a user to distinguish image features.

Regarding claim 5, Tomizawa discloses before classifying, locating peaks within the histogram data. (col. 7, lines 32-35)

Regarding claim 6, Qian discloses applying spatial modulation further comprises associating a unique modulation to the single colorant versions of each of the conflicting colors. (figures 7 and 8)

Regarding claim 7, Qian discloses measuring a color distance between at least one pixel in the image and at least one conflicting color; and applying an attenuated spatial modulation to at least one pixel in the single colorant version of the image, the attenuation ranging from zero to one hundred percent of a reference modulation, the level of attenuation being a function of the measured color distance. (figure 8)

Regarding claim 8, Qian discloses applying an attenuated spatial modulation to at least one pixel in the single colorant version of the image, the attenuation ranging from zero to one hundred percent of a reference modulation . . . attenuation being a non-linear function of the measure color . . . (figure 8)

Regarding claim 9, Qian discloses applying an attenuated spatial modulation to at least one pixel in the image, the attenuation ranging form zero to one hundred percent of a reference modulation, the level of attenuation being a linear function of the measure color distance. (figure 8)

7. Claims 10-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomizawa in view of Shay, US 5900886 A, "Display controller capable of accessing an external memory for gray scale modulation data".

Regarding claim 10, Tomizawa discloses an image processor operative to generate a single colorant version of a color image . . . comprising: an image analyzer operative to find and classify conflicting colors in the color image; (an input color-space discriminating portion, col. 7, lines 24-38, which prepares input color and extracts color components of a detected peak in a histogram for a color space)

However, it is noted that Tomizawa fails to disclose a gray scale modulator operative to add spatial modulations to single colorant versions of only the conflicting colors within the single colorant version of the color image.

Shay discloses a gray scale modulator (figure 9, element 58) operative to add spatial modulations to single colorant versions of only the conflicting colors within the single colorant version of the color image. (col. 8, lines 3-36)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include applying a spatial modulation to one representative color of the conflicting color, as Shay teaches, in the system of Tomizawa to allow a user to distinguish between colors having a close correlation with luminance.

Regarding claim 11, Tomizawa discloses a histogram collector operative to classify pixels in the color image based on a characteristic that is also used to generate the single colorant version . . . (col. 4, lines 53-59)

Regarding claim 12, Tomizawa discloses a conflicting color detector operative to examine the histogram and find pixels that are similar with respect to the characteristic that is used to generate the single colorant version . . . (col. 7, lines 16-23)

Regarding claim 13, Tomizawa discloses a color relationship discriminator operative to receive conflicting color classification information from the image analyzer and color image pixel information . . . (col. 7, lines 23-31)

Regarding claim 14, Shay discloses a spatial modulation attenuator operative to attenuate a gray scale modulation based on the relationship between the color image pixel and the conflicting color. (col. 8, lines 13-18)

Regarding claim 15, Shay discloses a spatial modulation generator operative to generate a gray scale modulation for application to a single colorant version of a color. (col. 8, lines 13-18)

Regarding claim 16, Tomizawa discloses relationship between the conflicting color and the color image pixel comprises a color distance within a color space. (col. 5, lines 56-64)

Regarding claim 17, Tomizawa discloses relationship . . . pixel comprises a color distance within a perceptually uniform color space. (col. 4, lines 47-49, HSL color space, which Examiner interprets as a uniform color space)

Regarding claim 18, Tomizawa discloses relationship . . . pixel comprises a color distance within a CIELAB color space. (col. 5, lines 18-20, employing a usable equation for derive a value of hue, it is well known in the art that a CIELAB color space is a usable equation for deriving a hue value)

Regarding claim 19, Tomizawa discloses that the image processor further comprises an image receiver. (col. 5, line 53, input video signal, which Examiner interprets as an image receiver)

Regarding claim 20, Tomizawa discloses image receiver further comprises a xerographic printer. (col. 8, lines 29-30, providing a technical apparatus for practical use)

Regarding claims 21-23, they are rejected based upon similar rational as above claims 4-6 respectively.

***Response to Arguments***

6. Applicant's arguments filed 10/25/2004 have been fully considered but they are not persuasive.

Applicant argues that Tomizawa fails to disclose classifying peaks within a histogram that have a similar luminance as conflicting colors. Tomizawa discloses a image area extracting method for extracting pixels whose color component have low correlation with luminance, furthermore determining for the color component the distribution relative to the component value, i.e. the luminance, a histogram of the color component value to examine the peak frequency to see if the peak frequency exceeds a value in a range of the color component, col. 2, lines 25-67. It is therefore the position of the Examiner that Tomizawa discloses classifying peaks in a histogram, col. 2, lines 45-46, that have a similar luminance, col. 2, lines 25-28 deriving a color component having a low correlation with luminance, which Examiner interprets as similar luminance as a conflicting color.

Applicant argues that Qian fails to disclose or suggest applying a modulation. Qian discloses characterizing an image based on color content of the image and further

discloses in background the use of color histograms to calculate the frequency distribution of a pixel and a function of the color, and that it is not possible to distinguish between color of an image with the same pixel elements using a color histogram, col. 1, lines 26-46. Qian further discloses using considerable spatial information about the image to avoid a blob representation, col. 2, line 60 – col. 3, line 20, to distinguish images on the basis of their content. Qian discloses quantifying a color of an image for a predefined area of size and shape, col. 2, lines 54-62. It is therefore the interpretation of the Examiner that Qian discloses quantifying the color of an image according to spatial information of the image, which suggests applying spatial modulation of an image. Applicant argues that Qian if unrelated to applying at least one spatial modulation to only one representative single colorant version of one of the conflicting colors. Qian discloses distinguishing color features with spatial information, col. 3, lines 20-22.

It is therefore the interpretation of the Examiner that Tomizawa allows the features of an image to be classified according to luminance differences and the invention of Qian discloses quantifying, i.e. modulating, a color to distinguish the feature of the image color according to spatial information.

7. Applicant argues that Shay fails to disclose conflicting color and the spatial modulator of Shay is related to preventing flickering in a LCD by modulating adjacent pixels of the same gray value at different frequencies. Shay discloses spatial modulation for gray scale pixels to generate different shades of gray to be displayed, col. 8, lines 14-26. Applicant argues that the spatial modulation disclosed in Shay is

unrelated to the modulation of a black and white version of a conflicting color disclosed in the present application. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., modulation of a black and white version of a conflicting color) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

8. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Motilewa A. Good-Johnson whose telephone number is (571) 272-7658. The examiner can normally be reached on Monday, Tuesday and Thursday 9:00 AM - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Motilewa A. Good-Johnson

Examiner
Art Unit 2675

mgj

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SUPERVISORY PATENT EXAMINER